

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**IN RE APPLICATION OF:**

**GROUP: 1796**

Karl OTT, et al.

SERIAL NO: 10/591-662

**EXAMINER:** Frank, Noah S.

FILED: September 5, 2006

## FOR: NOVEL SOLVENT FOR PRODUCING POLYURETHANE DISPERSIONS

**DECLARATION UNDER 37 C.F.R. § 1.132**

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

Sir:

Karl Häberle

Now comes [redacted] who deposes and states that: [redacted]

1. I am a graduate of  Johannes Gutenberg University Mainz  
and received my doctor's degree in the year 1986.

2. I have been employed by BASF for 20 years as a Chemist in the field of Polyurethane Dispersions.

3. The following experiments were carried out by me or under my direct supervision

and control

### Inventive steps

Experiments are submitted herewith that demonstrate the inventive step of the present invention:

#### Comparative example 1:

A glass vessel with stirrer, reflux condenser, and thermometer is charged with 400 g (0.40 mol) of a polyester formed from isophthalic acid, adipic acid, and hexane-1,6-diol, with an OH number of 112, 54.0 g (0.40 mol) of dimethylolpropionic acid, and 80 g of N-methylpyrrolidone. 233.4 g (1.05 mol) of isophorone diisocyanate are added and the mixture is stirred at 90°C for 160 minutes. It is then diluted with 700 g of acetone and cooled to 30°C. The NCO content of the solution is found to be 1.44% by weight (calculated: 1.43% by weight). 28.5 g (0.32 mol) of dimethylethanolamine are added. After five minutes dispersion is carried out with 1000 g of water over the course of ten minutes. Immediately after the end

of the addition of water a solution of 21.3 g (0.125 mol) of isophoronediamine and 8.6 g (0.083 mol) of diethylenetriamine in 40 g of acetone is added over the course of five minutes.

Subsequently the acetone is distilled off under reduced pressure and the product is diluted with water to 30% solids content.

#### Inventive example 1

The same procedure as in the comparative example is used, but using, instead of the N-methylpyrrolidone, the same mass of N-ethylpyrrolidone.

#### Inventive Example 2

The same procedure as in the comparative example is used, but using, instead of the N-methylpyrrolidone, the same mass of N-cyclohexylpyrrolidone.

These polyurethane dispersions were used to produce coating materials, which were investigated for steam resistance as follows:

For this purpose the coating material under test is drawn down twice using a box-type coating bar, at 180 µm each time, onto macore. The first coat is dried at room temperature, and, after the second coat, drying takes place at 60°C for 16 h.

In a 250 ml Erlenmeyer flask, water is heated to boiling, and the coated board is placed with its coated side onto the opening and weighted.

After 5 minutes' steam exposure the film is evaluated as follows:

Score	Evaluation
0	film shows no change
1	film is slightly discolored
2	film is severely discolored
3	film is slightly damaged
4	film is severely damaged
5	film is completely destroyed

With the polyurethane dispersions above, the films gave the following evaluations:

Example	Score
Comparative	2
Inventive 1	0
Inventive 2	0

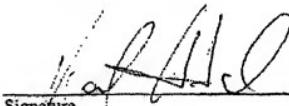
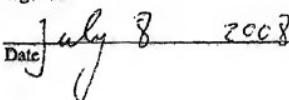
Coating materials based on polyurethane dispersions in which the polyurethanes have been prepared with one of the as-claimed solvents therefore exhibit improved steam resistance as compared with N-methylpyrrolidine.

This advantage was already part of the original disclosure content: page 17, line 13.

4. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

5. Further deponent saith not.

Signature

  
July 8 2008  


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